

WHAT IS CLAIMED IS:

(Wu a2) 1. A polycrystalline silicon film, the polycrystalline film containing Ni atoms of which density ranges 2×10^{17} to 5×10^{19} atoms/cm³ in average, the polycrystalline silicon film comprising a plurality of bar-like silicon crystallites.

2. The polycrystalline silicon film according to claim 1, wherein the polycrystalline silicon film is formed by crystallizing an amorphous silicon film containing Ni atoms properly by means of carrying out thermal treatment and applying electric field.

(Wu a3) 3. A polycrystalline silicon film, the polycrystalline film containing Ni atoms of which density ranges 2×10^{17} to 5×10^{19} atoms/cm³, the polycrystalline silicon film comprising a plurality of bar-like silicon crystallites, the polycrystalline silicon film on an insulating substrate.

4. The polycrystalline silicon film according to claim 3, wherein a buffer layer is formed between the insulating substrate and the polycrystalline silicon film.

5. The polycrystalline silicon film according to claim 3, wherein the polycrystalline silicon film is formed by crystallizing an amorphous silicon film containing Ni atoms properly by means of carrying out thermal treatment and applying electric field.

(Wu a4) 6. A polycrystalline silicon film, the polycrystalline film containing metal of which density ranges 2×10^{17} to 5×10^{19} atoms/cm³, the polycrystalline silicon film comprising a

plurality of bar-like silicon crystallites wherein the metal is a catalyst for metal induced crystallization of silicon.

7. The polycrystalline silicon film according to claim 6, wherein the polycrystalline silicon film is formed by crystallizing an amorphous silicon film containing the metal by means of carrying out thermal treatment and applying electric field.

8. The polycrystalline silicon film according to claim 7, wherein the metal is Au or Co.

9. A polycrystalline silicon film, the polycrystalline film containing metal of which density ranges 2×10^{17} to 5×10^{19} atoms/cm³, the polycrystalline silicon film comprising a plurality of bar-like silicon crystallites wherein the metal is a catalyst for metal induced crystallization of amorphous silicon.